CASE STUDY: Sustainable Building

carkeek park

environmental learning center

INFORMATIONAL SUPPLEMENT FOR DCLU CUSTOMERS

The May 2003 issue of dcluINFO *featured a case study on the South Lake Union Neighborhood's "Resource Guide for Sustainable Development." This month's feature highlights the Carkeek Park Environmental Learning Center, the City of Seattle's first LEED™ Gold-certified building.*

new building marks City's move from Silver to Gold LEED™ certification

On May 31, 2003 Seattle Parks and Recreation held the formal opening and dedication ceremony for the department's first green building project—the Carkeek Park Environmental Learning Center (ELC). This is also the City of Seattle's first project to pursue a LEED™ Gold certification. In fact, only one certified LEED Gold project previously existed in Washington—an environmental learning center on Bainbridge Island called IslandWood.

Carkeek Park Environmental Learning Center features north-facing clerestory windows as part of the daylight design. In the northeast corner pictured above a cistern collects rainwater for flushing toilets.

Photo courtesy of Geordie Selkirk
Project Architect
Selkirk Miller Hayashi Architects

The City's policy requires that projects over 5,000 square feet of occupied space achieve a LEED Silver certification. While the Carkeek Park project did not fall under the policy, because it is only 1,750 square feet, it made sense for Parks to adopt LEED as a design guideline and performance standard. The project will serve as both a demonstration project to educate visitors about sustainable building and an environmental learning center to teach children and adults about the ecology of the Piper's Creek watershed.

In the future, Parks will extend their commitment to environmental stewardship beyond the parks and eco-systems they protect and maintain to all capital and site development projects. Parks has embraced sustainable design practices to produce operational and maintenance costs savings, reduce environmental impacts, improve and restore ecological function of landscapes and natural areas, and increase the comfort, health and safety of visitors and employees. Parks has two additional LEED projects underway—the High Point and Yesler community centers—as well as a number of sustainable site improvement projects.

Carkeek Park ELC is a model for green building, as the strategies used can be applied to both residential and commercial buildings.

Stormwater Management: In Seattle, most of the rainwater from rooftops, sidewalks, and streets runs directly into the City's storm drainage system, picking up pollutants along the way, and ending up in our local creeks, rivers, lakes and the Puget Sound. As the Carkeek Park ELC is located within the Piper's Creek Watershed, Parks used the new facility to demonstrate alternative approaches to stormwater that protect the health of the watershed, salmon, and other aquatic species. Most of the stormwater from paved surfaces is directed to an infiltration trench and is naturally filtered and infiltrated into the ground. Some stormwater from the parking lot is collected in a detention vault and treated for total sus-

See **case study: carkeek park elc** *on page 8*

Photovoltaic cells will generate 20 percent of the building energy needs, funded in part by Seattle City Light's Green Power Program.

Photo courtesy of Dan Johnson
Project Manager, Seattle Parks & Recreation

Additional Resources

Seattle Parks and Recreation
(and tour of Carkeek Park ELC)
— *www.seattle.gov/parks*

Salmon-friendly landscaping
— *www.seattle.gov/util/RESCONS/plantNaturally/salmonfriendly.htm*

Rain barrels
— *www.seattle.gov/util/rainbarrel*

Seattle's Green Power Program
(opportunity to join more than 3,400 families and 34 businesses to support renewable energy sources)
— *www.seattle.gov/light/green/greenpower*

Low Impact Hydropower Institute
(and certification)
— *www.lowimpacthydro.org*

Cedar River Watershed Ed. Center
— *www.cedarriver.org*

IslandWood
— *www.islandwood.org*

Daylighting tips
— *www.lightingdesignlab.com*

LEED™ — *www.usgbc.org*

Sustainable Building Programs
City of Seattle
— *www.seattle.gov/sustainablebuilding*
DCLU
— *www.seattle.gov/dclu/sustainability*

case study: carkeek park elc, *cont. from page 7*

pended solids and total phosphorous to reduce pollutants before being discharged into the receiving water body. Rainwater that hits the roof is harvested and stored in a cistern and rain barrels. The water stored in the cistern is used for flushing toilets and the rain barrels store water for irrigating the landscape when needed.

Salmon-Friendly Landscape: Carkeek Park ELC demonstrates practices used to create a salmon-friendly landscape. Healthy soils amended with compost were used to absorb and hold moisture. Native and adapted plants were selected to create habitat and preserve biodiversity. Healthy soils and native plants also eliminate the need for pesticides and fertilizers that run off landscapes during storms and pollute local water bodies. Irrigation needs were carefully calculated; rainwater harvested from the rooftop and stored in rain barrels will be used to irrigate only when and where water is needed. Lastly, Parks will reduce pollution by relying primarily on natural fertilizers and pest control methods. These straightforward strategies can be adopted by any homeowner or business.

Energy Efficiency: The project team demonstrates that integrated design can significantly reduced energy needed to light, heat and cool the building. In fact, Parks estimates that the building will use 60% less energy than a similar building designed to meet the ASHRAE 90.1 Standard—approximately 45% less energy than if it was designed to simply meet the Seattle Energy Code.

Since electric lighting can consume as much as 50% of the total building energy, the project team oriented the building to take advantage of natural daylight, which provides not only a higher quality of lighting than electric lighting, but has also been shown to improve the health and comfort of occupants. The daylight design illuminates the space while controlling for heat gain and glare. Low-e glazing, overhangs, and blinds control direct sunlight, and a clerestory window introduces daylight high in the ceiling space. The daylight design was integrated with a high-performance insulation package, a radiant heating system, and natural ventilation.

Green Power: Parks partnered with Seattle City Light to install photovoltaic (PV) panels and generate energy on site using this renewable energy source. The PV panels will produce as much as 20% of the energy needed for the building. Parks also plans to enter into a contract with Seattle City Light to purchase 50% of its remaining energy demand from green power sources.

Seattle is building it's portfolio of green power. In 2002, City Light became the largest customer of Stateline Wind Energy Center, located along the Washington and Oregon borders. Wind energy is the fastest growing energy generation market, and is a source for dependable, affordable, and clean and green energy. This year, City Light's Skagit Project was certified as low impact hydropower by the Low Impact Hydropower Institute (LIHI). Low impact hydropower facilities help reduce the environmental effects that hydropower dams have on rivers and streams, protecting habitat for salmon and other aquatic species.

Seattle residents can choose to support green power through their utility bill. City Light's Green Power Program allows residential and business customers to make voluntary payments to support a wider range of new renewable energy sources. The payments for homeowners are $3, $7 or $10 per month, and for businesses range from $12 to $150. City Light's program will be used to fund local renewable energy projects.